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# RMI Company

JOHN F. HORNBOSTEL, JR.  
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August 17, 1986

EXPRESS MAIL

Paul Hancock, Esq.  
Ohio Attorney General's Office  
30 East Broad St.  
Columbus, OH 43266-0410

Dear Mr. Hancock:

Re: FIELDS BROOK SITE - COMMENTS ON U.S. EPA FEASIBILITY STUDY

Appreciated the opportunity to discuss RMI Company's (RMI) concern relative to the subject matter with you the other day. Glad your visit to the site, accompanied by James Steudler, from RMI's Ashtabula operation, went well. Appreciate your sharing RMI's concern to reasonably rectify this matter.

Enclosed for your review is a copy of a report, dated August 13, 1986, prepared by AWARE Incorporated, consultants in environmental management, analysing the Feasibility Study. You will quickly note in this most expert and comprehensive analysis of the problem that many significant deficiencies exist with respect to the Feasibility Study. RMI's environmental supervisor, Joe Holman, in his letter of August 14, 1986, to Ms. McCue of U.S. EPA (a copy of which is also attached) highlights three major concerns RMI has with the Feasibility Study.

Some of the major AWARE comments on the U.S. EPA Feasibility Study are essentially quoted below:

1. In view of the number of serious flaws identified in the approaches taken in this document (the Feasibility Study), it is the consensus that the final risk estimates have been so exaggerated that the Feasibility Report cannot be relied upon, and remedial action decisions cannot be made based upon the Report.
2. These assumptions can lead to such serious overestimations of the probable "worst case" exposure that one questions the utility of the resultant risk calculation.
3. The exposure assessment and subsequent estimation of risks for the chemicals at this site (Fields Brook) are generally inaccurate and in many instances have been so exaggerated that the final risks proposed no longer represent reality.



Paul Hancock, Esq.  
August 17, 1986  
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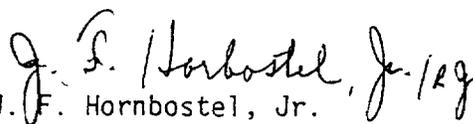
4. The probable level of exposure to contaminants via ingestion, dermal absorption and inhalation have been exaggerated.
5. Because actual soil/sediment half-lives can either be identified for each contaminant, or some reasonable yet conservative estimate can be assumed for each chemical, AWARE could find no justifiable reason why the degradation of chemicals has been ignored.
6. The assumption that the surface water serves as the drinking water for area residents is not a justifiable assumption and this exposure estimate should be removed.
7. The re-evaluation should reflect the amount of time a person typically spends outdoors, and the contribution that the sediments actually represent to the soil exposure a person might normally encounter.
8. The inclusion of such an exposure estimate, i.e., treating any and all sources of water as though they were a drinking water source and the only source of fluid intake during one's lifetime, is not justifiable.
9. The assumption that 100% of the soil/dusts comes from the stream sediments is a gross exaggeration of the potential problem.
10. The assumption that all of the fish consumed for a lifetime comes from this small stream is not a valid assumption to make.

RMI respectfully requests an opportunity to discuss this matter in more detail with you and Roger Hannahs of the Ohio EPA at your earliest convenience.

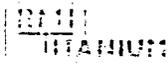
As we discussed, these reviews and comments were developed under severe time constraints, particularly after waiting over a year for the Feasibility Study.

RMI looks forward to working with you. RMI and its consultant continue to review and study this very complicated matter and plan to submit additional comments as appropriate.

Very truly yours,

  
J. F. Hornbostel, Jr.  
General Counsel & Secretary

Enclosures



# *RMI Company*

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August 14, 1986

## EXPRESS MAIL

Ms. Margaret McCue, SPA-14  
U.S. EPA Region V  
RE: Public Comment on Fields Brook  
230 South Dearborn Street  
Chicago, Illinois 60604

Dear Ms. McCue:

RMI Company would like to submit at this time comments on the Feasibility Study - Fields Brook Site, July 3, 1986.

Most of the comments to the study were prepared by Aware Incorporated and are attached. However, from RMI's perspective, the three points listed below are considered to be the major issues:

- (1.) The sediment ingestion rate used in calculating the risk assessment for metals is a factor of 100 higher than those currently considered realistic. Dr. Kinbrough, whom CH<sub>2</sub>M-Hill considers to be the final authority, has indicated that 0.1 grams per day is a more realistic estimate of the soil ingestion rate than those rates earlier published. Therefore cadmium and mercury (as well as other metals) cannot be used as a basis for remedial action at the brook.
- (2.) Excavation of the Route 11 Tributary is not warranted based on the analytical data used.
- (3.) Recently the Council on Environmental Quality promulgated regulations which rescinded the requirement to prepare a "worst case analysis" when preparing an Environmental Impact Statement (see Federal Register Vol. 51, No. 80, page 15618). Such a ruling should encourage the reappraisal of the basis of clean up set forth in the FS.



Ms. Margaret McCue, 5PA-14  
U.S. EPA Region V  
RE: Public Comment on Fields Brook  
August 14, 1986  
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RMI humbly requests the opportunity to discuss these and other items with the Ohio and U.S. EPA at the earliest opportunity. If such is possible, please contact the author at (216) 544-7688.

Sincerely,

A handwritten signature in cursive script that reads "Joe T. Holman".

Joe T. Holman  
Supervisor - Environmental Control

Attachments

cc: Mr. Kerry Street, U.S. EPA (w/attach.)  
Mr. Paul Hancock, Ohio Attorney General's Office (w/attach.)  
Mr. Roger Hannahs, Ohio EPA (w/attach.)

bc: Mr. J. H. Russell, Baker & Hostetler (w/attach.)  
Ms. Anne Forristall, Congressman Eckart's Office (w/attach.)  
Mr. J. F. Hornbostel, Jr., RMI Co. (w/attach.)  
Mr. R. J. Gerardy, RMI Co. (w/attach.)  
Mr. J. H. Clarke, AWARE Inc.

# AWARE

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consultants in environmental management

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August 13, 1986

6305

Mr. Joe T. Holman  
Supervisor, Environmental Control  
RMI Company  
P.O. Box 269  
Niles, Ohio 44446

Dear Mr. Holman:

We have completed a preliminary review of the risk assessment performed by the U.S. EPA and its contractors concerning the Fields Brook site. In the sections which follow, we have provided both general and specific comments to this risk assessment. While our work to date has been limited, we feel it has been sufficient to define serious deficiencies in the risk assessment report. These deficiencies are of a magnitude such that it is impossible to have any degree of confidence in the risk estimates which have been provided. While there is certainly merit to the calculation of a "worst case" estimate of risk, even this worst case risk assessment must be based on realistic estimates of exposure. This simply has not been the case in the Fields Brook risk assessment. Rather, exposures have been seriously exaggerated with a subsequent compounding of errors which renders the entire calculation unrealistic and of little value.

In the paragraphs which follow, we have provided both generic and specific comments concerning the procedures employed in the Fields Brook risk assessment and the assumptions which were incorporated into the various calculations. At this point in time, the following observations are provided:

## GENERAL CONCERNS

1. A brief review of all of the exposure estimates shows them to be in error. Some routes of exposure have been so seriously exaggerated that the approaches used should be re-evaluated and corrected before the risk assessment document can be used in any meaningful manner. In view of the number of serious flaws identified in the approaches taken in this document, it is the consensus of this review that the final risk estimates have been so exaggerated that the report can not be relied upon. In particular, this report should not be relied upon to make any decisions regarding whether or not certain remedial actions should be taken, nor can it be relied upon to estimate the change in risk afforded by any remedial actions that are ultimately taken.
2. Assumptions have been made which neglect the limited bioavailability of many of the chemicals of interest, from ingestion of sediments or through dermal

Mr. Joe T. Holman  
August 13, 1986  
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exposure. Also, biodegradation losses are neglected for the organics. These assumptions can lead to such serious overestimations of the probable "worst case" exposure that one questions the utility of the resultant risk calculation.

3. Mathematical errors or miscalculations have been made which act to inflate the actual and even "worst case" estimates of the potential exposure.
4. Maximum contaminant values and average concentrations are based on inadequate sampling data.
5. Finally, the risk estimates or ADI guidelines used are not the only such risk estimates or guidelines available. The merits of using other guidelines were apparently not considered nor discussed.

### SPECIFIC CONCERNS

For the specific comments of this summary report the statements of concern are identified by page and paragraph number followed by only a brief description of our concern or critique of this particular statement or procedure.

1. Page 2-1, first paragraph—"This environmental and human assessment presents the existing and potential future environmental and human health effects of the Fields Brook site in the absence of any remedial actions, land use restrictions, or zoning changes (no action alternative)."

Response (Re): This statement is not true. The exposure assessment and subsequent estimation of risks for the chemicals at this site are generally inaccurate and in many instances have been so exaggerated that the final risks proposed no longer represent reality.

2. Page 2-2, second paragraph—"The environmental media that may contribute to potential exposure of humans to contaminants are:
  - o Sediment, through ingestion, dermal absorption, or inhalation.
  - o Surface water, through dermal absorption or ingestion.
  - o Fish through ingestion.

Re: In each instance the probable level of exposure to contaminants via each of these routes of exposure has been exaggerated, as discussed in detail in the comments on Appendix A. Thus, the final total exposures are erroneously overestimated as are the resulting risks.

3. Page 2-4, first and third paragraphs—"Where possible the potential effects are quantified. Where criteria are not available, the potential effects are evaluated qualitatively. Carcinogens without published cancer potencies for the exposure route under consideration are qualitatively evaluated."

Re: The exclusion of certain chemicals may skew the focus of remedial actions causing them to address only those chemicals for which some risk estimate has been attempted. How can cleanup guidelines be developed ignoring these contributions and how can one estimate the change in risk from these chemicals for each remedial option considered?

4. Page 2-4, third paragraph—"The compounds that have cancer potencies published by the CAG were quantitatively assessed by estimating an excess cancer risk for each exposure route."

Re: The estimated risks posed by carcinogens are well known to be dependent upon the type of mathematical model chosen. This form of uncertainty in the final estimates is not adequately addressed in this document.

5. Page 2-5, entire page. "Factors tending to overestimate health risks are:

- o Chemicals were assumed not to degrade over time and therefore constant concentrations are used.
- o Organic chemical concentrations reported as 'detected but less than the quantitation limit' in the RI report were used in this exposure assessment as equal to the quantitation limit.
- o Calculations with chemical ingestion assumed 100% absorption into the body.
- o Health risks resulting from exposure to sediment are calculated based on average concentrations from samples taken from 0 to 12 inches and maximum concentrations at any depth reported in field samples from the RI.
- o Health risks resulting from exposure to surface water are calculated based on maximum concentrations reported in field samples from the RI.
- o Clearance of contaminants is not considered."

Re: All six of these limiting assumptions act to exaggerate the actual chemical exposure, particularly future exposures. Because actual soil/sediment half-lives can either be identified for each contaminant, or some reasonable yet conserva-

tive estimate can be assumed for each chemical, the reviewers of this FS document can find no justifiable reason why the degradation of chemicals has been ignored. Furthermore, the oral bioavailability of a number of chemicals, particularly the metals, will be considerably less than 100%. Studies with a chemical like TCCD, which can be completely absorbed, demonstrate that the binding of chemicals to the organic fraction of sediments will significantly limit absorption. The use of maximum soil or water levels rather than an average value is not justifiable except under very unusual circumstances. Such circumstances are not warranted here. Furthermore, the assumption that the surface water serves as the drinking water for area residents is not a justifiable assumption and this exposure estimate should be removed. Additional problems with these assumptions have been discussed in the comments addressing the exposure scenarios provided in Appendix A.

6. Page 2-9, all of Table 2-2

Re: The assumption that the chromium measured is present as hexavalent chromium is unrealistic. Hexavalent chromium is such a strong oxidizing agent that it is very unstable in the environment. In addition, the utility and reliability of some of the numbers in this table are suspect. For example, a U.S. geological survey indicated that 46% of the surface water samples taken contained cadmium levels  $>1\mu\text{g}/\text{l}$  (National Academy of Sciences, Drinking Water and Health, 1977). Thus, if the EPA criteria to protect aquatic life from chronic exposure were accurate ( $0.025\mu\text{g}/\text{l}$ ) it would seem that approximately one half of the surface waters in the U.S. could not support aquatic life. Likewise the cited chronic value in this table for mercury is  $0.57\text{ ng}/\text{l}$ . Thus, once again aquatic life does not seem viable in normal, uncontaminated waters of the U.S. given the numbers used in Table 2-2 for mercury. Similar inconsistencies between the guideline and normal ambient conditions can be cited for copper and lead. Therefore, it would appear that some of the numbers used in this table are unreliable and inaccurate as toxicity/hazard guidelines.

7. Page 2-22, all of Table 2-5

Re: While this table implies there may be some harm occurring from the metals listed, the first two exposure estimates are inaccurate. The ingestion estimate of  $0.1\text{ g}$  of soil per day is the most accurate and reliable exposure estimate (as discussed in comments on Appendix A). Therefore, this table should be corrected to reflect the lack of harm or deleted.

8. Pages 2-27 through 2-30, the Summary.

Re: For the preceding reasons and those listed for Appendix A, the conclusions listed in this summary inaccurately reflect the risk associated with the no action alternative and, therefore, can not be relied upon for any judgements concerning the need for or selection of remedial actions being planned for this site.

## APPENDIX A

1. Page A-2, all of Table A-1

Re: The numbers used in this table are a major source of the error and exaggeration of exposure that has been provided by CH<sub>2</sub>M-Hill. Conversations with Dr. Kimbrough as well as a review of similar papers attempting to measure the ingestion of soil and dust by children indicate that 100 mg is a better estimate for small children, and that approximately zero to perhaps 1 mg is a better exposure rate for persons above the age of 5 years of age who do not have the habit of sucking or licking dirty fingers (see Hawley, J., "Assessment of Health Risks from Exposure to Contaminated Soil," Risk Analysis 5(4), 289-302, 1985). In addition, some of the average body weight estimations listed in this table are generally too small given the age span being considered. For example, a teenage boy is not likely to weigh only about 84 pounds until the age of 18. For these reasons, all of the soil ingestion exposures are invalid and this exposure pathway should be completely re-evaluated. At a minimum, this re-evaluation should use better estimates for the amounts of soil ingested for each age group and better yearly averages of body weights. Also, the re-evaluation should reflect the amount of time a person typically spends outdoors, and the contribution that the sediments actually represent to the total soil exposure a person might normally encounter.

2. Page A-3, Table A-2, Lifetime Average Water Intake

Re: The lifetime average water intake is in error. While these numbers might reflect the average fluid intake for a person, not all of the daily fluid intake will be comprised of water. Recent FDA estimates for the three basic age groups would be better input to this table. More important is the issue regarding whether or not the stream should even be considered a drinking water supply since it clearly is not. The inclusion of such an exposure estimate, i.e., treating any and all sources of water as though they were a drinking water source and the only source of fluid intake during one's lifetime, is not justifiable.

Both the LAWI and LASI calculations in this table have been performed in a manner which tends to exaggerate the average lifetime dose on a per kilogram of body weight basis. The percentage of a lifetime at each dosage rate should be incorporated before the dose/kg column is added and divided by 70 years.

3. Page A-3, Table A-2, Lifetime Average Daily Dermal Adsorption for Wading and Swimming

Re: These calculations are based on 100% dermal absorption which is a clear over-estimation for many of the contaminants; especially heavy metals like cadmium which have a minimal absorption rate. In addition, the average body weight for a teenager in this equation differs from that used in the LAWI calculations without any justification being given for a change which increases

the daily intake for this age group by about 10%. However, as already discussed, 70 lbs is too small a body weight for a 15 year old in any event.

4. Page A-5, fourth paragraph—"Dust emissions are considered negligible on days when precipitation exceeds 0.01 inch, which is reported to be an average of 162 days per year for the area around Ashtabula County, Ohio. NOAA reports that for Ohio, approximately 60% of the precipitation days occur outside the winter months. Thus, Ashtabula County has approximately 146 days per year (49 = 60 percent of 162) when climatic conditions would prevent outdoor activity and dust emissions."

Re: The average number of days when dust emission is a potential problem has been miscalculated. By adding the contribution of freezing conditions to precipitation, the calculations somehow manage to decrease the number of days when dust will not be a problem from that number one would use by just considering rainfall alone. An obviously more realistic calculation should be 49 (freezing conditions) + 162 (precipitation) = 211 days during which dust is not a significant problem.

5. Page A-5, LACIS calculation

Re: As discussed above, the value for  $f$  should be  $1 - (211/365) = 0.42$ . Thus, all of the LACIS calculations are erroneously high by about 50%. An additional error is the assumed 100% bioavailability from soils for all chemicals. This represents another clear exaggeration of the potential exposure to chemicals from this site. Lastly, not all of the soil or dust consumed in this area could come from stream sediments. These would only represent a small portion of the soil/dust sediments with a corresponding small portion of the soil/dust exposure compared to other sources in the area. Therefore, to assume that 100% of the soil/dusts comes from the stream sediments is a gross exaggeration of the potential problem.

6. Page A-8, LACIS for occupational exposures

Re: If a worker works 5 days per week for 50 weeks = 250 days and the 8 holidays are subtracted, then the exposure is only for 242 days. This figure ignores sick leave, a factor which should be figured in as well. Again, an error occurs in the calculation of  $f$ , the fraction of the year that exposure is possible, which should be 0.42 rather than 0.60. Lastly, not all the dust could come from stream sediments as these would probably only represent a small portion of the dust or soil sources. Thus, this exposure estimate, like those preceding it, is a gross exaggeration of the actual exposure.

Mr. Joe T. Holman  
August 13, 1986  
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7. A-14, Lifetime Average Fish Daily Ingestion Rate

Re: Like the water and soil consumption rates, this calculation adds an unrealistic exposure hazard. While we have no argument with using the 6.5g of fish per day, the assumption that all of the fish consumed for a lifetime comes from this small stream is not a valid assumption to make. Further, many of the chemicals of concern will not concentrate in the edible portions of the fish and some will be lost during cooking.

The above comments address the major concerns which we have with the Fields Brook risk assessment at this time. Other concerns could be stated as well. For example, the use of detection limits when chemical analyses do not detect the presence of a particular chemical constituent is another example of a procedure which merely exaggerates the exposure estimates to the point that one loses confidence in their use.

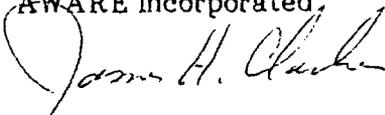
We are also concerned that the PCB analysis concerning the Rt. 11 Tributary is based on inadequate data and unrealistic exposure estimates as well. Furthermore, removal of materials having these low levels seems inconsistent with practices at other sites and unwarranted. We will evaluate this further but could not do so now due to the extreme shortness of time available.

We would appreciate the opportunity to provide additional comments and, more importantly, to suggest an approach and a set of assumptions which we feel would result in reasonable and more realistic estimates of risk. We will provide additional documentation with respect to our concerns as time permits.

Please do not hesitate to call if you have any questions or if you require additional information.

Sincerely,

AWARE Incorporated,



James H. Clarke, Ph.D.  
President